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**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

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Sheet

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of

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**Complete if Known**

Application Number	10/092,158
Filing Date	March 5, 2002
First Named Inventor	Wies, Evan F., et al.
Art Unit	2462 2142
Examiner Name	Not Yet Assigned H. V. Nguyen
Attorney Docket Number	IMM062C

Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Country Code <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)			
AVN	38	EP	0349086		1/3/1990	Stork Kwant B.V.	✓
	39	JP	01-003664		7/18/1990	Taito Corporation	✓
	40	JP	02-109714		1/13/1992	Epoch Co. and Key-Planning Co.	✓
	41	JP	05-193862		1/27/1995	Sega Corporation	✓
	42	JP	04-007371		8/3/1993	Taito Corporation	✓

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Examiner Signature	<i>H. V. Nguyen</i>	Date Considered	9/15/2007
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Examiner Name	Not Yet Assigned

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**OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS**

Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
AN	43	ADELSTEIN, "A Virtual Environment System For The Study of Human Arm Tremor," Ph.D. Dissertation, Dept. of Mechanical Engineering, MIT, June 1989.	
	44	ADELSTEIN, " Design and Implementation of a Force Reflecting Manipulandum for Manual Control research," DSC-Vol. 42, Advances In Robotics, Edited by H. Kazerooni, pp. 1-12, 1992.	
	45	AUKSTAKALNIS et al., "Silicon Mirage: The Art and Science of Virtual Reality," ISBN 0-938151-82-7, pp. 129-180, 1992.	
	46	BAIGRIE, "Electric Control Loading - A Low Cost, High Performance Alternative," Proceedings, pp. 247-254, November 6-8, 1990.	
	47	BEJCZY et al., "Kinesthetic Coupling Between Operator and Remote Manipulator," International Computer Technology Conference, The American Society of Mechanical Engineers, San Francisco, CA, August 12-15, 1980.	
	48	BEJCZY, "Sensors, Controls, and Man-Machine Interface for Advanced Teleoperation," Science, Vol. 208, No. 4450, pp. 1327-1335, 1980.	
	49	BEJCZY, "Generalization of Bilateral Force-Reflecting Control of Manipulators," Proceedings Of Fourth CISMM-IFToMM, Sep. 8-12, 1981.	
	50	BEJCZY, et al., "Universal Computer Control System (UCCS) For Space Telerobots," CH2413-3/87/0000/0318501.00 1987 IEEE, 1987.	
	51	BEJCZY et al., "A Laboratory Breadboard System For Dual-Arm Teleoperation," SOAR '89 Workshop, JSC, Houston, TX, July 25-27, 1989.	
	52	BROOKS et al., "Hand Controllers for Teleoperation - A State-of-the-Art Technology Survey and Evaluation," JPL Publication 85-11; NASA-CR-175890; N85-28559, pp. 1-84, 03/1/1985.	
	53	BURDEA et al., "Distributed Virtual Force Feedback, Lecture Notes for Workshop on Force Display in Virtual Environments and its Application to Robotic Teleoperation," 1993 IEEE International Conference on Robotics and Automation, pp. 25-44, 05/02/1993.	
	54	CALDWELL et al., " Enhanced Tactile Feedback (Tele-Taction) Using a Multi-Functional Sensory System," 1050-4729/93, pp. 955-960, 1993.	
	55	"Cyberman Technical Specification," Logitech Cyberman SWIFT Supplement, 4/5/1994.	
	56	EBERHARDT et al., "OMAR - A Haptic display for speech perception by deaf and deaf-blind individuals," IEEE Virtual Reality Annual International Symposium, Seattle, WA, Sep. 18-22, 1993.	
AN	57	EBERHARDT et al., "Including Dynamic Haptic Perception by The Hand: System Description and Some Results," DSC-Vol. 55-1, Dynamic Systems and Control: Volume 1, ASME 1994.	

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HJ	58	GOBEL et al., "Tactile Feedback Applied to Computer Mice," International Journal of Human-Computer Interaction; Vol. 7, No. 1, pp. 1-24, 1995.	
	59	GOTOW et al., " Controlled Impedance Test Apparatus for Studying Human Interpretation of Kinesthetic Feedback," WA11-11:00, pp. 332-337	
	60	HOWE, "A Force-Reflecting Teleoperated Hand System for the Study of Tactile Sensing in Precision Manipulation," Proceedings of the 1992 IEEE International Conference on Robotics and Automation, Nice, France, May 1992.	
	61	IBM Technical Disclosure Bulletin, "Mouse Ball-Actuating Device With Force and Tactile Feedback," Vol. 32, No. 9B, February 1990.	
	62	IWATA, "Pen-based Haptic Virtual Environment," 0-7803-1363-1/93 IEEE, pp 287-292, 1993.	
	63	JACOBSEN et al., "High Performance, Dextrous Telerobotic Manipulator With Force Reflection," Intervention/ROV '91 Conference & Exposition, Hollywood, Florida, May 21-23, 1991.	
	64	JONES et al., "A perceptual analysis of stiffness," ISSN 0014-4819 Springer International (Springer-Verlag); Experimental Brain Research, Vol. 79, No. 1, pp. 150-158, 1990.	
	65	KACZMAREK et al., "Tactile Displays," Virtual Environment Technologies.	
	66	KONTARINIS et al., "Display of High-Frequency Tactile Information to Teleoperators," Telemannipulator Technology and Space Telerobotics, Won S. Kim, Editor, Proc. SPIE Vol. 2057, pp. 40-50, Sep. 7-9, 1993.	
	67	MARCUS, "Touch Feedback in Surgery," Proceedings of Virtual Reality and Medicine The Cutting Edge, Sep. 8-11, 1994.	
	68	MCAFEE, "Teleoperator Subsystem/Telerobot Demonstrator: Force Reflecting Hand Controller Equipment Manual," JPL D-5172, pp. 1- 50, A1-A36, B1-B5, C1-C36, January 1988.	
	69	MINSKY, "Computational Haptics: The Sandpaper System for Synthesizing Texture for a Force-Feedback Display," Ph.D. Dissertation, MIT, June 1995.	
	70	NOLL, "Man-Machine Tactile," SID Journal, July/August 1972 Issue.	
HJ	71	OUH-YOUNG, " Force Display in Molecular Docking," Order No. 9034744, p. 1-369, 1990.	

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HN	72	OUH-YOUNG, "A Low-Cost Force Feedback Joystick and Its Use in PC Video Games," IEEE Transactions on Consumer Electronics, Vol. 41, No. 3, August 1995.	
	73	OUHYOUNG et al., "The Development of A Low-Cost Force Feedback Joystick and Its Use in the Virtual Reality Environment," Proceedings of the Third Pacific Conference on Computer Graphics and Applications, Pacific Graphics '95, Seoul, Korea, 21-24 August 1995.	
	74	PATRICK et al., "Design and Testing of A Non-reactive, Fingertip, Tactile Display for Interaction with Remote Environments," Cooperative Intelligent Robotics in Space, Rui J. deFigueiredo et al., Editor, Proc. SPIE Vol. 1387, pp. 215-222, 1990.	
	75	PIMENTEL et al., "Virtual Reality: through the new looking glass," 2 <sup>nd</sup> Edition; McGraw-Hill, ISBN 0-07-050167-X, pp. 41-202, 1994.	
	76	RABINOWITZ et al., "Multidimensional tactile displays: Identification of vibratory intensity, frequency, and contactor area," Journal of The Acoustical Society of America, Vol. 82, No. 4, October 1987.	
	77	RUSSO, "The Design and Implementation of a Three Degree of Freedom Force Output Joystick," MIT Libraries Archives 08/14/1990, pp. 1-131, May 1990.	
	78	RUSSO, " Controlling Dissipative Magnetic Particle Brakes in Force Reflective Devices," DSC-Vol. 42, Advances in Robotics, pp. 63-70, ASME 1992.	
	79	SCANNELL, "Taking a Joystick Ride," Computer Currents, Boston Edition, Vol. 9, No. 11, November 1994.	
	80	SHIMOGA, "Finger Force and Touch Feedback Issues in Dexterous Telemanipulation," Proceedings of Fourth Annual Conference on Intelligent Robotic Systems for Space Exploration, Rensselaer Polytechnic Institute, Sep. 30 - Oct. 1, 1992.	
	81	SNOW et al., " Model-X Force-Reflecting-Hand-Controller," NT Control No. MPO-17851; JPL Case No. 5348, pp. 1-4, 06/15/1989.	
	82	STANLEY et al., " Computer Simulation of Interacting Dynamic Mechanical Systems Using Distributed Memory Parallel Processors," DSC-Vol. 42, Advances in Robotics, pp. 55-61, ASME 1992.	
	83	TADROS, " Control System Design for a Three Degree of Freedom Virtual Environment Simulator Using Motor/Brake Pair Actuators", MIT Archive @ Massachusetts Institute of Technology, pp. 1-88, February 1990.	
HN	84	TERRY et al., "Tactile Feedback In A Computer Mouse," Proceedings of Fourteenth Annual Northeast Bioengineering Conference, University of New Hampshire, March 10-11, 1988.	
HN	85	YAMAKITA et al., "Tele-Virtual Reality of Dynamic Mechanical Model," Proceedings of the 1992 IEEE/RSJ International Conference on Intelligent Robots and Systems, Raleigh, NC, July 7-10, 1992.	

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